Tower Conductivity Calibration

Step 1:
Push the **SET UP RUN** button to get this screen. From here push **CALIBRATION** (Button 2) to go to the next screen.

```
          >HOME SETUP<

SETPOINTS                DATE/TIME
CALIBRATION              CONFIGURE
TIMERS                     HISTORY
CUSTOMIZE              WATER METER
ALARMS                      RELAYS
```

Step 2:
This is the Calibration Screen. From here push **SENSORS** (Button 1) on a MegaTron SS or select the appropriate **SYSTEM** number on a multi-system MegaTron.

```
          >CALIBRATION<
SENSORS
```

Step 3
From here push **SYSTEM COND** (Button 1) to go to the next screen.

```
          >CALIBRATION<
SYSTEM COND              SYS TEMP
*SYSTEM pH
*SYSTEM ORP
```

***Note:** Menus for setting each sensor type's calibration are similar to conductivity shown in the example.

Step 4:
This is the Conductivity Calibration Screen. From here push **CALIBRATE** (Button 1) to go to the next screen.

```
    >CONDUCTIVITY CALIBRATION<

CALIBRATE            Cal = 0.977
RESET ZERO
```

Step 5:
Calibrate the conductivity against the actual reading. Make sure the sensor is in the water. Set the desired value by using the number keys and arrows. Then press **ENTER** and then **HOME** to finish (If the conductivity is 1000, be sure to put a 0 in front of the actual reading because there are 5 digits).

```
    >CONDUCTIVITY CALIBRATION<
CALIBRATE              RELAY ON
       00000 (A/D: 00000)
         [       ] uS/cm
PRESS NUMBER KEYS TO CHANGE, PRESS
ENTER TO ACCEPT OR BACK TO ERASE
```

Calibration Troubleshooting

On the Conductivity Calibration Screen, to the right you will see for example: Cal=0.977. This represents the Cal Factor, which is basically the conversion ration for controller conductivity. For towers, this number should generally stay under 3.00 and above 0.50. Anything outside of these ranges may indicate a potential problem.

The A/D in this menu is the controller's digital representation of raw analog voltage. This number can range between 0 and 32,767 on MG & SS units and 0-45,000 on XS units. The conductivity readout on a controller will range from 0-20,000. Although the 2 numbers will likely never match completely, the readings relative to their respective scales should be close.

For instance, if the A/D reading on a tower card is 500, it is at the low end of its A/D scale. In return, the conductivity reading on that controller should be in its lower end readings of 100-400 as well.

Using the A/D reading, the CAL number, and knowing the actual system water conductivity, one can typically determine if the conductivity problem is related to the probe, the controller, or is caused by an outside source.

See back page for help.

Calibration Trouble Shooting

If the A/D reading is at the extreme low end of the range with hot water on the electrode, this indicates a dirty or faulty electrode or an opening in the wiring run. Check electrode for deposits that might reduce exposure to the water between the two references. The wire run can be checked by shorting the two conductivity wires at the electrode going back to the controller. This shorted input should read close to the full A/D scale in the calibration pop-up screen.

If the A/D reading is at the extreme high end of the range, this can indicate a short in the electrode or wire run or stray current in the sample stream piping.

The Cal factor is an indication of how far the conductivity value has been calibrated from its factory default value. Typical Cal factors for tower applications will generally be in the 3 to 0.5 range. Cal factors outside of this range accompanied by conductivity tracking issues and/or a decreased conductivity measurement range could indicate that the conductivity reading has been repeatedly calibrated without cleaning the sensor. To bring this factor back in line, perform the following procedure:

1. Remove and clean the conductivity sensor using the procedure described in the boiler electrode cleaning procedure below.
2. With the sensor still out of the sample line (clean and dry), verify that the A/D is below 200 in the Calibrations screen press cancel then go to the RESET ZERO button to remove all previous calibration entries.
3. Reinstall the sensor and perform the boiler conductivity calibration steps shown at the beginning of this guide.

Conductivity Electrode Cleaning

1. Record the current conductivity reading.
2. Turn off water flow through the electrode loop, bleed pressure from the line and remove electrode.
3. Use a clean cloth and a mild cleaning solution to remove loose dirt etc., from the flat surface of the electrode.
4. If the electrode has deposits such as scale attached to the electrode surface a more aggressive cleaning approach will be needed. There are several ways to do this, the preferred method being the one that is easiest for the user.
    a. Use a mild acid solution to dissolve deposits.
    b. Lay a piece of sandpaper (200 grit or finer) on a flat surface such as a bench top. “Sand” electrode to remove stubborn deposits. (Do not wipe surface with your finger.) Oil from your skin will foul carbon tips.
5. Reinstall the electrode in the system. After the reading stabilizes, calibrate the unit to a reliable test reading.

Many times an electrode can appear to be clean, but the unit still cannot be calibrated. If this is the case, use one of the more aggressive electrode cleaning procedures listed in step 4 above. Recheck the calibration after completion of this procedure. If no change was observed in the reading, replace the electrode. If a change occurred but the unit still will not calibrate, repeat procedure as many times as necessary.